

CLOSING REMARKS

JOE WHITE (U.S. Naval Research Laboratory): It's that time again. I think what we have got left now are the hard-core PTTI faithful and the people whose flights have been cancelled. But either way, I am happy that you are still here. This is where I usually do my Oprah imitation, and we walk around and talk to people and see how you like the meeting. I tell you what I like, what I didn't like.

First of all, I was very pleased this year that we were able to give the PTTI Award to Harry Peters. In fact, Harry, since you are sitting here, there is another round of applause for you. Congratulations.

I also had a very good time last night at Steve Dick's history of the Naval Observatory. A lot of things I had no idea that they had done in the past, or the nature of the people who had done them.

Our other accomplishments: We finally got the 2001 Proceedings out. Most of you probably have two copies. We are learning; we are learning slowly, unfortunately, but we are learning, and I think this year we will do a bit better. What we had been doing in the past was making actually a hardcopy Proceedings and then making a softcopy Proceedings. And that procedure is not working well anymore, so this year will be our first year at all-digital, and hopefully that will resolve a lot of these things, and it will get out to you a lot quicker.

Credit cards: You know we tried a few years back to do that, and it was a dismal failure. The past couple of years, we have tried a new approach. And we had a dozen or so people use that, something in that range. So we have made some headway there; it is only available right now to people who have pre-registered, but at least that possibility is there. [Citibank has since cancelled our service.]

It is almost time to roll the credits, but let's just go to the people who actually contributed a lot to this meeting. Andy, of course, is not here; he wound up having a rather sudden operation last week, but I understand he is doing well and misses being here. Jay Oaks did the work in the program this year and, Jay, thank you very much – a lot of hard work. His assistant is Lara Schmidt. Lara will be the Program Committee Chairman for next year; she has already got a lot of good ideas. If you have ideas of things you would like to see in the meeting on the program next year, go see Lara. She will be happy to help you out.

The next person is the one who actually really makes all this happen. Hotels don't work well by themselves; they need someone to guide them and keep them pointed in the right direction. And that, of course, has been Sheila; she's done this for us a number of years. And, as usual, she has done quite well, so I am very happy about that.

Nikki Jardine at the registration desk, with a number of helpers. Also, Harold Chadsey and Paul Kuhnle here have a lot of the work on the AV, and a number of other people, so let's have a round of applause for whoever we've got left here.

My chance to talk about the things I liked, and there were a lot of things that I liked in this meeting, but some of the things, in particular, caught my eye: I liked the paper Jay did early in the meeting. We talk a lot about our ability to do time transfer, and we are seeing numbers this year, I think down in the picoseconds in some cases, under very carefully controlled conditions. And certainly low nanoseconds, high hundreds of picoseconds fairly reliably now in a lot of these conditions. What Jay did has brought us back to the roots of this, back to the early day of Timation in TS1, the early GPS work, to show you not only what our numbers were, what our hardware was, how hard we had to work to get some of these

numbers. So I thought it put things nicely into perspective. And, of course, we have had a lot of nice numbers presented this year and the things that people can currently do.

The other thing I particularly liked, also early in the meeting, was to see the various systems that can do time dissemination as far as where they are going. A lot of our effort has been dedicated in the past toward what we can do with GPS, and certainly we have done a lot of nice things. What we are seeing this year now, more and more though, is what will be available to us with Galileo as it comes forward. And, also, I was very pleased to see the GLONASS resurgence, that that capability will be available to us in the future as well.

And finally, the other thing that I was particularly was impressed with is the ability to do time transfer by other means. GPS certainly has its limitations, if you are trying to do transfer within a campus, within a ship, those kind of things, GPS will get you to outside of this, but probably not to the inside. So the two new network timing things, the 1588 and the PSynUTC I thought were both very nice enhancements to basically what we can do. We are now seeing numbers down below 100 nanoseconds for time transfer over Ethernet. Granted, it is under fairly carefully controlled conditions, but for a lot of our applications that really does well. The balancing thing there, I think, with George Shaton's paper on NTP on a campus, on a not-so-controlled network and the realities of what we really have to do, in some cases, to make this work.

So, finally, we have had comments and questions from prior years. I wanted to try to address a couple of those before we get to the things that you all are concerned about this year and in future years. Probably the biggest question we ever get is "how do I get this stuff in advance?" and I wish I had a good answer for you; I really don't. What we can put out in advance are the things we have in advance: the Advance Program, the registration information, and we are trying to get that out to our Web site as quickly as possible. You have noticed this year we sent you an e-mail well in advance of the Call for Papers getting to you and the Advance Program getting to you so that you did have that information relatively quickly.

Someone always wants to have a copy of the paper or a copy of the slides at the time of the meeting, and it is a great idea, but it just doesn't seem to be practical to do. We've looked at that, and probably the two biggest things that get in the way are approval processes. In some cases, people can get slides approved, or don't have to get them approved, easier than they get papers approved. So the things you see here are publicly releasable, but not in hardcopy form. So I think there is a feeling somehow that showing something on the screen is different than handing you a hardcopy of that. And that does seem to be an issue for some folks. And, of course, the whole business of just availability in general. We are the timing community, but we are always late. There are people writing papers on the way here, sometimes the day before. So it just in the end is not practical, much as we would like to do it.

Here's where we are going next; next year is San Diego, the Hilton Resort – I believe this is Mission Bay. In 2004, we will be back to the Washington area, and for the first time in a decade or so, we will not be out here. Some people are asking why we aren't coming back to Reston. Last time we were they were saying, "you're going back to Reston again?" So we are going downtown in 2 years, in 2004. We have got a nice location there, and I think you will find it a good meeting. It will be a bit harder to get to from Dulles Airport. On the other hand, all the things that are magic about downtown Washington will be easily accessible to you. The hotel is near a Metro stop, so those in the local Washington area will hopefully be able to get there a little bit easier, particularly if it snows. So that should help some.

And finally, the last thing I want to talk about is where we are going in 2005. It has been proposed a number of times over the years that we in some way work together with the Frequency Control Symposium. This has always been a topic of some contention. While the meetings are designed to complementary – the things we do and things they do are not supposed to overlap all that much, and, in

fact, to feed different areas of technology – there has always been some friction, I think, between the meetings. So the idea of having a joint meeting is not something we approached easily, but after due consideration, we are on track now to have a joint meeting within the year 2005.

We have not picked a final location. The front runner at the moment, and it is just for the moment, is Vancouver, which is a very nice place to have a meeting. And the time of year will be a split between the time that they normally have their meeting, roughly the Memorial Day time frame, and ours, right after Thanksgiving. So, probably, this will be right after Labor Day, within a week or two of that. It is something that I would appreciate your comments on. As I say, it has been something of a challenge for us to try to organize this. We have a Memorandum of Understanding with FCS that we think pretty much nails down the things that we are worried about, to make sure the kind of quality meeting that we try to provide to you happens then, that you see the papers you want to see from this arena, and also that you get the chance to get good exposure to the things that they have that we don't have.

FCS is a larger meeting; they run a multi-track meeting with usually three parallel sessions. And, of course, the problem with three parallel sessions is you have to decide which one to go to. So one of our challenges is to make sure that not only will you be able to see the papers you would normally see here, but the organization will allow you to at least see some of the others and get a good chance to get a feel for what other technology is out there that you may not have seen before.

So with that, I would like to open it up for your comments. What did you like this year? What didn't you like this year? And what things would you like to see us do in the future? So at this point, it is your meeting.

STEVEN HUTSELL (Second Space Operations Squadron): I have two comments. The first is just to re-emphasize that the people who work in requirements, both at the Naval Observatory and at Air Force Space Command, have their work cut out for them in terms of collecting information about who is out there and how to validate that information. So as much as we can spread the word about routing that information to them, the more we help them.

The second comment I would like to make is that I am very glad to see that – highlighting much of what you said, Joe, about alternative means for timing and navigation – that we are still seeing people working on independent, redundant techniques for obtaining precise time and precise positioning, navigation, etc. And we want to continue to encourage that. And I say that, given that I work in the Command and Control Center of GPS, I am going to be the first to tell everyone that I see that having separate, redundant techniques for obtaining those valuable resources is of utmost importance for critical DNT operations.

WHITE: One of the things that I meant to mention that I didn't is Ron Lee has brought us the requirements survey. It fits right in with what Steve was saying, if you have things you would like to see happen in GPS, this is a good time to get your licks in. I think we have closed the registration desk, but the Web site is there; and we can probably put a link to it somewhere if you have any questions about how to get to it. I encourage you to be involved in that process.

Other comments or questions? No? Okay, then, thank you very much.

